

January 25, 2006

MEMORANDUM

TO: Mr. Steve Murray, P.L.S. - Tippecanoe County Surveyor

FROM: David W. Eichelberger, P.E. - CBBEL, Indianapolis

SUBJECT: **Avalon Bluff, Section 3**
CBBEL Project No. 02-038 (DV)

DEVELOPER/OWNER: **C.P Morgan Communities, L.P.**

LOCATION: **40° 20' 50" Latitude**
-86° 51' 15" Longitude

RECOMMENDATION: **Final Approval with Conditions**

C.P. Morgan Communities, L.P. is proposing to develop a 35-acre subdivision at the northeast corner of County Road 500 South and County Road 250 East (Concord Road) in Tippecanoe County. The proposed development includes 105 single family lots, a common area, and a detention pond. Under existing conditions, stormwater sheet flows to three outlets. The southeast corner of the site and an off-site area to the east drain to a 15-inch CMP under CR 500 South, which drains to an existing pond south of CR 500 South. The southwest corner of the site drains to a 12-inch CMP under CR 500 South and eventually drains to Kenny Ditch. The remainder of the site drains to a 12-inch CMP under CR 250 East and flows through an outlot of Concord Place into a channel/wooded ravine and eventually reaches Wea Creek. Upon completion of the proposed development, stormwater will continue to outlet to these three outlets.

Adjacent landowners downstream of the 15-inch CMP in the southeast corner of the site have requested that the developer of the subject property provide adequate stormwater runoff to the 15-inch CMP to minimize impacts to the existing pond south of CR 500 South. These landowners have also requested that this stormwater runoff be "filtered" to minimize the impacts to the pond. The following information has been provided by the applicant in order to address the adjacent landowners concerns.

The existing drainage area to the 15-inch CMP is 22 acres. Only 4.5 acres of this watershed are located on the Avalon Bluff property. The other 17.5 acres that are tributary to the 15-inch CMP are not under the control of the subject development, and are located on the Hunters Crest property, east of Avalon Bluff. Therefore, the Avalon Bluff property makes up only 20% of the watershed tributary to the 15-inch CMP. Since 80% of this watershed is located on the Hunters Crest property, the Hunters Crest development will have a greater impact to the stormwater quantity and quality draining to the 15-inch CMP. In addition, there is an undetermined amount of watershed located south of CR 500 South (downstream of the 15-inch CMP) that is also tributary to the existing pond, and not under the control of either development.

In the proposed condition, the watershed to the 15-inch CMP will be reduced from 22 acres to 20.74 acres due to the Avalon Bluff development. This is a reduction of 1.26 acres, or around a 6% reduction. The peak discharges for the 2-year, 10-year, and 100-year storms will be reduced by the subject development as follows:

Frequency	Existing Discharge (cfs)	Proposed Discharge (cfs)	Reduction (cfs)	% Reduction
2-year	12.64	11.03	1.61	13%
10-year	23.48	20.97	2.51	11%
100-year	39.10	35.46	3.64	9%

In the proposed condition, the applicant is addressing stormwater quality by adhering to the Ordinance requirements, which require 80% TSS removal during the first 1-inch of rainfall. The applicant will install an Aqua-Swirl unit to act as the post-construction BMP for this area. The unit will be installed at the end of the proposed storm sewer system that drains this portion of the development. The unit will be located within an easement so that monitoring and maintenance can be performed. A post-construction BMP Operations and Maintenance Manual has been developed by the applicant for this unit.

In summary, the proposed development will reduce the watershed tributary to the 15-inch CMP by around 6%, which will lead to a reduction in peak discharges of around 10%. Stormwater quality will be addressed through the use of an Aqua-Swirl chamber, prior to the release to the 15-inch CMP.

The outlet to the west has also received additional attention. According to the Ordinance requirements, the allowable release rate to the west is 15.44 cfs during the 10-year frequency storm, and 26.31 cfs during the 100-year frequency storm. However, the existing 12-inch culvert under Concord Road cannot convey these discharges without overtopping the road. Therefore, the applicant has proposed a 12-inch outlet from the proposed detention pond that will only release 2.64 cfs during the 10-year frequency storm in the proposed conditions, and 3.63 cfs during the 100-year frequency storm. This reduction in discharges has resulted in a detention storage volume of around 8 acre-feet, which is roughly two times more than the expected volume using the Ordinance allowable release rates.

Based on information available to CBBEL, it does not appear that any Tippecanoe County Regulated Drain exists at or near the project site. There are no regulated drain outlets, crossings, or encroachments proposed with this development. Runoff from the site eventually discharges to Kenny Ditch and Wea Creek.

This project was previously reviewed in a memorandum dated August 22, 2005. After a review of the most recently provided information, CBBEL recommends final approval of the stormwater management plan with the following conditions:

1. A signed copy of the Notice of Intent (NOI) must be provided.
2. The proposed contour lines in the northwest corner of the project site west of Lots 148 and 149, which are incorrectly labeled, must be revised.

3. Pad elevations should be provided for the residential lots north of Section 3 that are adjacent to the emergency stormwater flow path to ensure the required freeboard will be provided.
4. A copy of the BMP O&M Manual showing the drainage and access easements for the proposed BMPs still should be provided.
5. The applicant must present the project at the Tippecanoe County Drainage Board meeting for the project to be considered for approval.
6. The applicant still should notify the downstream adjoining property owners in accordance with Chapter 3, Section 2. C. of the Ordinance. Notification should include all downstream properties to Kenny Ditch and Wea Creek (receiving system for discharge from site).
7. The applicant should still obtain approval from the Tippecanoe County Highway Department for all work proposed within future right-of-way areas and for all work within the County Road 500 South and County Road 250 East Rights-of-Way.
8. The applicant must pay any final drainage review fees per Ordinance 2005-04-CM and submit a letter to the County Surveyor's Office stating that these fees will be paid.
9. The applicant must pay the Phase II stormwater program fees.
10. The applicant must provide recorded copies of restrictive covenants satisfactory to the Tippecanoe County Drainage Board and the Tippecanoe County Surveyor's Office.
11. The applicant must provide proof to the Tippecanoe County Surveyor's Office (TCSO), of the formation of a Homeowners Association (HOA), which will assess sufficient funds for the inspection and maintenance of all drainage facilities. An estimate of the needed annual assessment for maintenance and inspection of the drainage facilities must also be provided to the TCSO. In addition, a yearly report must be submitted to the TCSO to show that the HOA is still active and to report the amount of assessments collected.
12. All listed issues must be completely addressed before final plan approval and sign-off will be granted by the County Surveyor's Office.

No error or omission in either the plans, calculations or applications (whether said plans, calculations or applications have been reviewed by the review engineer or not) shall permit or release the applicant and designer from constructing this work in any other manner than that provided for in the County Ordinance.

pc: Schneider Corporation

DWE/jd

M02-038DV2.DOC